

AVIATION WEEK

AUG. 16, 1948

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1929... when DOUG DAVIS won

defied a Thompson Trophy Race, his Traveler "Mayday Ship," with a Wright Whirlwind engine, averaged 154.50 m.p.h. around the closed course. It marked the first time that a civilian plane had defeated military ships in speed competition.



1932... when the famous

JAMES DOUGLASS won a one-lap closed-course speed record that stood for four years. He flew a rubbery red and white Gee Bee "Super-Special" and averaged 252.66 m.p.h. for his laps of the 10-mile Thompson Trophy Race course.



1936... when MICHAEL DETROYAT

of France became the only foreign pilot to win a Thompson contest. His ship, a Curtiss-Wright racer, averaged 264.35 m.p.h. and published in the world the all-time record of wing-loading and remarkable landing gear for faster flying.



1938... when the colorful

ROSCOE TURNER set the new record of 283.61 m.p.h. and gained added fame as the only pilot to win the Thompson Trophy twice. In 1919 he won the trophy's closed race, stepped from his big Turner-Land Special, and announced his retirement from air racing.



1946... when the first postwar

Thompson contest was flown, and the first postwar plane competed in a Thompson Trophy Race. The "J" Division of the race was won by MAJOR CURT F. BENDERSTOCK of the Army Air Force in a Lockheed P-60 "Shooting Star" at the brilliant average speed of 315.45 m.p.h.



1947... when COOK CLEVELAND,

World War II ace, flying a stripped-down Navy "Corsair," averaged 395.15 m.p.h. to set a new record for piston engine planes. There were over 5,000 persons under his wing and his speed exceeded by nearly 115 m.p.h. the previous record of Roscoe Turner.



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"Safe-Lock" terminals may be ordered loose or attached to cable in complete assemblies... will not be ordered in measurement, ready for installation.

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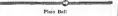
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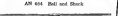
AN 607 Standard Fork End



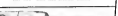
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THE AVIATION WEEK

Challenge of the Sky-Coach

C. R. Seath's bright vision of a three-coach-aide passenger airline has not vanished with positive setbacks. In slightly different form and with new backers, the idea of doing an transportation competitive with rail coach travel has flashed back to plague the certificated carrier.

The challenge of interstate "sky-coach" service to the regular airlines has developed in three important sections of the American air transportation scene. Currently, the battle between "irregular" operators and their certificated competitors on the transcontinental run has taken the spotlight. But bargains-counter fare on the Pacific Northwest-Alaska and New York-Puerto Rico routes also have been a continuing headache to the scheduled carrier since the beginning of 1948.

Operating DC-3s and an occasional DC-4, the "non-scheduled" are flying between New York and Los Angeles for \$99 plus tax, and, in one instance, at \$88 plus tax. The companies to \$148.15 plus tax for transportation in the same equipment on the certificated airlines and about \$138 for DC-6s and Constellations. A further 10 percent increase on coast-to-coast regular fares may become effective next month.

Bargain Rates to Puerto Rico

On the heavily-traveled New York-San Juan route, irregular operators offer fares averaging about \$75 one-way (one operator has a \$40 tariff), compared with about \$131 for their two certificated competitors, Pan American Airways and Eastern Air Lines. Between Seattle and Alaska points, the non-scheduled have undercut Northwest Airlines and Pan American passenger fares by 20 percent or more.

Early in December, CAB plans to hold another hearing on new routes between the U. S. and Puerto Rico. Non-scheduled and irregulars have flooded into the proceeding. Among the applicants are World Airways, which operates 30 passenger Boeing 314 flying boats (Aviation Week, June 21), American Air Transport and Flight School, Inc., Piedmont Air Transport, Modern Air Transport, Trans Caribbean Air Cargo Lines, World Air Service and Riddle Aviation Co.

Passenger . . . But No Mail

Three of the carriers emphasize they will continue to offer one-way service with second-class fares if certificated between the U. S. and Puerto Rico. In some cases, the non-scheduled request authority to carry passengers and property only—no mail.

How much business potential exists between New York and San Juan was illustrated by Trans Caribbean Air Cargo Lines, which told CAB that 101,000 persons

traveled from Puerto Rico to the U. S. in 1947, and over 60,000 from the U. S. to Puerto Rico in the same year.

A somewhat similar situation exists on the Pacific Northwest-Alaska run. During the spring summer and fall, such non-scheduled as Mt. McKinley Airways, Alaska Air Service, Standard Air Cargo, Columbia Air Cargo, Northern Airlines and Golden North Airways have flown thousands of fishermen, miners, casual workers, construction personnel and other non-white-collar passengers between the Seattle area and Alaska.

Growth of the non-scheduled traffic from the Pacific Northwest to Alaska was pointed up recently by a Seattle Chamber of Commerce study. It disclosed the irregular carriers spent \$4,744,000 on wages, facilities, fuel and services in the Seattle area alone during 1947.

Still Make Profit

The principal transcontinental irregular carrier claims they are making a profit on their \$99 coast-to-coast fares despite the 10 to 15 percent commission paid to travel agencies which generate much of their business. The secret, they say, lies in their coast-type service.

Coffee is served aboard the planes, but no meals. During a 20-hr. transcontinental flight (compared to 12 hr. on the certificated lines) the non-scheduled plane relays at fields where passengers have access to restaurants. At the departure point and destination, "trills" such as baggage handling are eliminated.

Often the irregular operators do not dispatch their flights until a high load factor is assured. Flights full occur on a 21-passenger DC-3 housed coast-to-coast usually means a profit, even with the \$99 fare.

New Field Opens

The non-scheduled claim they have opened a whole new field of air transportation in their sky coach service and that they divert very little traffic from the regular carriers. Whether CAB will agree is an open question.

The Board had before it this year an application for coast-type service in the segment of Atlantic Airlines for a certificate in the Middle Atlantic Area Case. The bid was turned down last February on the ground that it would create severe competition for existing certificated lines which were suffering heavy financial losses and because Atlantic's estimated costs seem to the Board, to be unsoundable.

CAB is now faced with a slightly different proposition—coast applications by going companies with lesser costs, but its answer may well be the same as in the Atlantic case. Meanwhile, the certificated carriers could take the edge off the non-scheduled arguments by instituting coach type services of their own and by following American Airlines' lead in having the heavily loaded with special first-of-the-week cut-rate fares.

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NEWS DIGEST

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Civil Aeronautics Board Chairman Joseph J. O'Connor, Jr., has been named chairman of the Air Coordinating Committee, the Federal government's overall coordinating agency, on aviation. The committee, which also advises the President on aviation policy matters, is composed of representatives from State Department, Air Force, Navy, Commerce Department, CAB and the Federal Reserve.

Court of Appeals for the District of Columbia has denied bail for Bennett E. Meyers, former Air Force procurement officer, pending action on his appeal from a conviction of inducing another person to give false testimony.

Joint Air Force-Navy maneuvers will be held off the Florida Gulf coast between Sept. 27 and Nov. 3. Headquarters for the maneuvers will be split between Eglin Field and Pensacola.

FINANCIAL

Commonwealth Aircraft Engineering Corp. reports net profit of \$1,027,796 for the first six months of 1948. Earnings per share are \$1.02, based on the two-for-one stock split in June, 1948. Comparable figures last year were \$518,872 and \$1.01, also based on the split. A \$1 dividend was declared on new common stock to \$2 on the old stock.

As Associates, Inc., has net income of \$110 for the quarter ended June 30, 1948, as compared with an adjusted loss of \$85,667 for the same period in 1947. Sales for the period totaled \$1,542,292 compared with \$1,498,956 for the same quarter a year ago.

Boeing Aircraft Corp. showed profit of \$142,741 for the first quarter of 1965 on sales of \$2,257,966.

FOREIGN

Navy Carrier Battle Group 12, including the USS Intrepid (CVN-14), is scheduled to arrive in the North Sea in late 1991. The group will be the first US Navy carrier battle group to be deployed to the North Sea since the end of the Vietnam War.

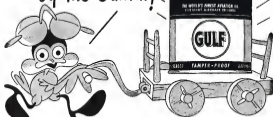
Second Turkish Group of the USAF Strategic Air Command will send 10 B-57C's to England on "tactical training missions." They will replace the 10th Bomb Group now "training" in Germany.

Asa Service Corp., Philadelphia, will make an aerial mapping and color-infrared navigation survey in Africa for Mobilohque Gulf Oil Co., subsidiary of Gulf Oil Corp. The survey covers 45,000 square miles in Portuguese East Africa.

The Birdmen's Perch

By Major Al Williams, ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Edeco, Pittsburgh 20, Pa.

Good News
by the Canful!



And in case you weren't wound like
march, here's what the guest new ad is
the car does.

It's flushed away as oil drains! That means that parts won't last and you save money on maintenance.

is a fully degradable digester type with endogenous sludge and slimes. Four years it took us six years of experimental work to bring you the world's finest and for public profit machine!

But remember... Gulfgrade Aviation Series D is for horizontally opposed engines. For all other types, loop on using Gulf Aviation Oil or Gulfgrade Motor Oil.

3. Cultivators soon have proved that the soil will fix nitrogen unless and only when kept free from weeds. That means more work on the cornfields.

2. It allows easy access from between overhauls! (It's been tested for over 100,000 hours in actual fleet service.) That means fewer costly on-engine overhauls.

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WE CAN CARRY TH'S GEAR
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BECAUSE EVERYPILOT WILL WANT TO USE GULFSTREAM AIRCRAFT, WE'VE CREATED THE GULFSTREAM PILOT'S CLUB.

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ITS KIND IN THE WORLD

Group Formed to Plan Plane Development

Working as ACC branch, board will study design, cost and airline need of transports.

A five-member advisory group, functioning as an arm of Air Corps Policy Committee, has set to work to blueprint a program for development of commercial transport and cargo prototypes.

The group has the hearty endorsement of Sen. Owen Brewster (R., Me.) and Rep. Carl Hays (R., Cal.), the chairman and vice chairman, respectively, of the former Congressional Aviation Policy Board, who sponsored legislation authorizing a government-financed commercial plane development program.

President's Air Policy Commission and the Congressional Aviation Policy Board, that they positively cannot undertake any commercial plane development on their own—felt the costs are too great and cannot be written off with safe to the airlines. "However desirable," therefore, it is a question of either no

commercial plane development in the United States, or as a government program. It is a question of our government promoting advanced types for our airlines or having our airlines buying foreign-made in four or five years.

■ **Manufacturers' Sound.** The same question is possibly right in their concern that the government, under the program, will develop only two or three transport types and one or two cargo types, and commercial plane development will be concentrated in a few firms. The California congressional committee said: "The manufacturers were all in favor of the program. But when they started to realize that they might not get business under it, some turned against it, and consequently whipped up opposition to it."

Membership on the inter-agency group which has started planning on a government prototype program corresponds to that of the proposed Civil Transport Aircraft Evaluation and Development Board provided for in the Reuther-Bricker bill. It consists of Gen. H. H. Arnold, assistant to Assistant Secretary Air Corps; V. G. Vandehey, representing the Air Force; Charles C. Canine, representing the Navy; Harold G. Gurnea, representing the Army; and George B. Hargis, representing Civil Aeronautics Administration, and its Board, representing National Advisory Commission for Aeronautics.

■ **Sub-Committee** Like the working sub-committee will be set up.

(1) A money allocation act, to which, not a plan whereby the government can, at least in part, recoup its expenditure in prototype development.

(2) Subcommittee on requirements to determine the present and future demand of airlines, the armed services, and other civilian interests for transport and cargo craft. This subcommittee will also make a study of air cargo potential.

(3) Technical subcommittee, to study the design requirements for prototype.

Membership on the inter-agency group is still flexible. The four agencies concerned may designate different, or additional persons to represent them.

The group met informally with Brewster and Hays and is functioning as a branch of ACC to provide an

Channel Wing Flight

Up and down went the Custer channel wing airplane at Dayton (OH) airport recently.

The strange looking experimental aircraft with two D-shaped channels for wings, climbed in an altitude of about 25 ft before pilot Frank Kelley set the throttle of its two engines and it settled to the ground.

Wilfred K. Center, inventor of the aircraft and Kelley was testing the aircraft and feeling out the controls. He was endeavoring to reproduce the spin at the two engines and was watching his tailwheel intently. Custer had expected the aircraft to lift about a foot off the ground and was crushed at the side of the runway to shoot a piston. But instead the aircraft flew, just at about 25 ft altitude.

When Kelley discovered he was airborne he chopped the throttle. The craft had enough forward momentum so that the flow of air around through the channels and the plane came down to land with minor damage reported to a popular fly and one channel.

Additional flight tests are planned on September 15th at airport and modifications of the prototype and channel wing are completed. Kelley is president of the National Aircraft Corp., which has been formed to develop the aircraft.

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10 AVIATION WEEK, August 16, 1948

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"HOLLOWELL" KEY BIT



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criticism that the agencies concerned are out-stepping their jurisdiction in planning a controversial prototype program.

At the outset with Brewster and Hawkes the two main points of discussion were possibilities for recovering governmental expenditures and the "net jet debt" for new types to be developed under the program.

► **Fund Retrieving**—On accepting funds, the only proposal brought forth was that the government levy a fee on all planes manufactured from prototype and use it to offset development costs. Hawkes commented that this would interfere with use of the capabilities of the program to make advanced type planes available to the industry at a price they can afford. "But it would not seriously affect this objective unless the fee were too great," he commented.

A professional advisor to the Senate Armed Services Committee, Col. Justice Chambers, is independently making a series of visits of reconnaissance around development costs. He has also raised the possibility of reducing the actual per mile of airlines carrying the aircraft of aircraft plants developed under the government program. The saving on fuel pay would be applied to allowing costs of the development program.

New Craft for Chile

The new Martin 2-02 transports left Washington, D. C., National Airport early this month en route to Santiago, Chile, where they will be put in service by *Aviacion Nacional* (NAC) but two other Martin 2-02s.



HOW SMALL CAN YOU BUILD THEM?

Convair engineers Ken Cowart, Karl Wiegman and William Chiles (shown in pilot's position) built the Wecker, their model plane in 600-man hours at a cost of \$200. At left, the craft weighs 137 lb. weighs less a new type of 15 ft. and is powered by a 22-hp engine. Design specifications

Prop Reversing: Aid to Safety?

Airlines, CAA pilots study braking action of reverse thrust propellers. Greater payload one issue at stake.

The contribution of reverse thrust propellers to an airplane safety is being weighed carefully by the airlines, pilots, the Federal Aviation Administration, and the Civil Aeronautics Administration.

Object is to determine how much of an anti-performance model should be allowed transport aircraft equipped with the new type prop. If it will be good for the reversible propeller's braking action, and approach and landing performance, the airlines may be able to operate on smaller fields and show a marked increase in their fuel mileage.

Data are also being gathered to determine whether thrust propellers are of such importance to safety that this should be made mandatory requirement on all airline aircraft.

► **Reversible Study**—Federal concern of reversible propellers to air safety is illustrated by a CAA study of landing accidents—the most frequent type of airline mishap. During the five-year period 1945-47, 45 major landing accidents were recorded. 24 of which involved reversing. It is believed that had reverse thrust propellers been used, some of these airline accidents might have been prevented, and the savings of other might have been secured.

Tailoff accidents may also be fewer because of reversible propellers. W. A. Pittman, United Air Lines president, and the crash at a company DC-4 at LaGuardia Field on May 20, 1947, in which 13 persons were killed, probably could have been prevented had the plane been equipped with reverse thrust propellers.

During takeoff, with the gear lock automatically on, the U.S. DC-4 was unable to get into the ground. The pilot, not yet powered, applied his brakes and attempted to ground loop 1800 ft. from the end of the runway, but the plane failed to stop, plowing beyond the end of the runway.

► **Openers**—Vernon, recent CAA-sponsored meeting in Los Angeles disclosed which different opinions in the airline industry, airports, possibly provided by reverse thrust propellers during landing. The airlines are currently attempting to coordinate the views of its membership so that further research can be made to CAA this month.

Approximately two years ago, CAA issued a safety regulation asking permitting installation of reverse thrust propellers on aircraft when certain minimum safety requirements were met. It indicated that installation would be given to the use of reversible propellers on aircraft in showing that a duplicate set of wheel brakes was necessary and in the establishment of acceptable landing distances. It also stated that the use of reverse thrust propellers in determining landing distances.

To date, several aircraft have, including the DC-6 Constellation, Convair 440 and Martin 2-02, have been certified with reversible propellers in installation, although none has met reverse thrust in determining performance data. At the request of aircraft manufacturers, CAA has now proposed for discussion the entire subject of creating performance credit for reverse thrust propellers. And manufacturers and airlines have been quick to discuss.

► **Los Angeles Meetings**—At the Los Angeles meeting, speakers for Constellation, Vultee Aircraft Corp. and Boeing Airplane Co. told CAA that use of reverse thrust propellers should be permitted in showing that a duplicate set of wheel brakes is necessary. "It would then even with a single set of wheel brakes the use of reverse thrust should be allowed in determining the acceptable

landing and stopping distances.

Despite Aircraft Co. and Glenn L. Martin Co. also believe no reversible propellers should be considered in showing that a duplicate set of wheel brakes is necessary. But they do add that dual wheel brakes should be required if reverse thrust propellers are used in determining the acceptable landing distances.

Representatives of Lockheed Aircraft Corp. declined comment. Propellers should not be used to substitute for a duplicate set of wheel brakes unless the weight penalty of a dual brake system is very small. They agreed, however, that if dual brakes are employed because of reverse thrust should be permitted in determining acceptable landing distances.

► **Thriller**—Citing difficulties still being experienced with reversible propellers, several airlines and the Air Line Pilots Association urged caution in allowing credit for their braking action. Eastern Air Lines stated bluntly that present reverse thrust propellers are unsatisfactory and, therefore, the company does not favor their use in performance determinations.

On the basis of its experience, American Airlines said that appropriate use landing in low landing propellers will stop during the reversing cycle. It is attributed mainly to reduction difficulties, particularly at high altitudes, since the sliding settings are not compensated for altitude.

► **Tests Made**—AA has been testing an installation with a double duct, whereby the pilot can pull the throttles through the reversing device and to the normal stop without taking the eyes off the runway. Up to about 4000 ft. this provides adequate power. (At least in the test airplane) to prevent the propellers from stopping during the reversing cycle. But American said it still does not provide sufficient power at lower altitudes, where the aircraft reaches a height of 7000 ft., the propellers will not stop during the reversing.

One of reverse thrust propellers should not be permitted in showing that a duplicate set of wheel brakes is necessary, AA declared. It added that standard propellers should not be used either in determining the maximum landing distance rating of the wheel brakes or in establishing acceptable landing distances.

► **Caution**—CAA representatives and the members of future civil and commercial aircraft safety and the first that reversible thrust can be completely satisfied before permission to reverse thrust propellers in performance data is given. "Until it is proved that the propeller will always stop, the use of reverse thrust is not assuming their general would lower the safety level," CAA declared.

Northwest Airlines and TWA agreed with American that reversible propellers should not be used in determining acceptable stopping distances. But American Airways took a different position, saying that employment of reversible thrust propellers should be permitted in showing that a duplicate set of wheel brakes is necessary and stating that use of reversible propellers should be allowed in determining the acceptable landing and stopping distances with a single brake system if an emergency system is provided.

The Air Line Pilots Association also agreed to support its use reversible thrust propellers on airplanes because they greatly increase safety. "The same holds, however, that in any present state of development reversible propellers should not be used in determining maximum landing distances or in developing figures for acceptable stopping distances.

Fairchild Favored

Edward Dornier Corp. at Philadelphia expressed preference for the Fairchild Engine and Airplane Corp. offer of 5100 GPH in the telephone version of the Reversible Aircraft Corp. The company favored Fairchild's offer "because" it had a 5100 GPH installed in the Hughes Aircraft Co.



NEW GEAR FOR PACKET

Aviation Research Packet landing gear, the first a dual-wheel nose gear installation, will be installed on the C-119 production model.

The new dual wheel installation reduces the ground pressure to accommodate the increased gross weight of the new Pratt and Whitney T55 power plant. The new dual wheel installation reduces the ground pressure to accommodate the increased gross weight of the new Pratt and Whitney T55 power plant. The new dual wheel installation reduces the ground pressure to accommodate the increased gross weight of the new Pratt and Whitney T55 power plant.

Sonic Review

Fast flying planes have brought a host of new considerations to the attention of the aircraft carrier and amphibious assault. Little knowledge on this subject is wrapped up in its own case-out review—by "Principles of Sonic Aerodynamics" and "The Case of the Case of American Wars."

Military 2-02

Martin bids for USAF business with design for seven versions.

Glenn L. Martin Co. is offering seven basic modifications of its Model 2-02 aircraft transport for military use.

These include self transport, cargo transport, hospital plane, airborne troop carrier, low engine transport, multi-engine transport and solar bombardment carrier.

► **Change Modification**—Cargo version of the 2-02 provides a loaded up cabin, 100 seats, standard cargo in down facilities, large cargo doors, jettisoning gear and air landing and an increased payload. The military or cargo 2-02 would gross 14,800 lb. in contrast to its commercial maximum of 79,500 lb. and carry a 17,500 lb.

► **Cracking Speed** is 250 mph at 12,000 ft. Staff, hospital and troop carrier versions would standard engine modifications for these functions. Cargo version is designed in take off and climb a 50 ft. altitude in 17.50 ft.

► **Two Thrust** has two extra thrust and engine installation possible in the cabin for use by transport when they are not flying. The maximum is designed for a gross weight of 36,000 lb. and will take off in 1300 ft. at runway at that weight.

► **Navigation**—New gear installation has a cabin modified to accommodate 17,500 lb. in standard and three engine units. The cabin is equipped with several duplicate flight instrument panel, six fuel tanks, automatic fuel meter and warning lights for the navigation. The version has a 17,500 lb. gross weight and requires 1750 ft. for takeoff. Maximum range of cruising speed of 200 mph in 1400 miles.

► **Modification**—The cabin is modified with a tail section under the belly to be used of the wing and a second bay behind the wing designed to carry 21,100 lb. payload. Five fuel tanks are provided for the standard bombardment with another four forward for extra bombing. The standard bombardment is equipped in a special compartment at the end of the wings.

AMC Sideline

Overhaul work scarce, firm selling equipment, taking nonaviation jobs.

In line of diminishing overhaul business, American Maintenance Corp. has been looking for nonaviation business.

While it will continue to handle aircraft maintenance and overhaul, AMAC already has embarked on one lively-looking sideline introduction of photographic equipment. "Clearing the decks for earlier communications on such products, the company has put on the block a major portion of its aircraft overhaul equipment."

► **Need from Argentina-Rogers Skunkel**, president of the Via Vaya Golf, Inc., is awaiting an agreement from the Argentine government for the purchase of about 60 percent of his equipment, valued at \$500,000. But the Argentines are taking their time about consummating the deal. Meanwhile, Skunkel is bringing up orders for his newly formed photo business. He already has small experimental orders for dyes, developers and printers, and has to compete at a manufacturer of precision equipment.

American Maintenance recently sold eight overhaul equipment and parts to a Hong Kong maintenance firm for just short of \$250,000. What Skunkel hopes to have left after the new deal is a small aviation overhaul business, and a photo business.

► **Rank, Putnam-Standish blames** the MIA maintenance picture on an over-saturation of the maintenance field, and the letting of maintenance con-

tracts to overhaul shops of companies primarily in the air transportation field. For the standard methods on maintenance (see company, Skunkel) cites the fact that 48 firms (including American Maintenance Corp.) recently bid on a contract to overhaul 40 R-101 Navy planes. He believes a similar number will bid on other relatively small Navy contracts.

► **High Bids-While bids** for the first bid 21 maintenance shops at Van Nuys, overhead and maintenance team has failed American Maintenance to enter high bids on what maintenance contracts exist.

The firm is interested in selling to Argentina, but as Skunkel puts it, "The Argentine sales are not a dead-end letter in our shipping in business." "We would like it because we could dispose of our surplus in a single package."

► **Roberts-Less-What Skunkel** notes is that while business has not been good, it never was, and the firm's financial position is such that he can take six months to get his surplus equipment to a good potential market. He has already secured a million dollar RFC loan to \$25,000.

Meanwhile, his plant, which at peak employed 2700 and grossed over \$1,300,000 monthly in overhaul and maintenance contracts, shut down for 45 days to show the firm could make over compensation plans.

Ryan Gets USAF Order For 15B Additional Navvies

A \$2,500,000 contract to Ryan Aeronautical Co. to provide the Air Force with 15B Ryan Navvies. Ryan plans plan components and spare parts to 60 more Navvies, less out the with a military "ad-hoc" plane.

The Ryan-built Navvies will be given, and 17A to disintegrate them from the 53 L-17A Navvies purchased by the Air Force last year from North American Aviation, Inc., original maker of the rugged all-metal five-place. Air Force is acting as contracting agent for the Army Field Force and the National Guard in the new order. Deliveries will start in September or October and continue until the first of the year.

More than a third of the L-17B planes will be used by companies located abroad, half in Europe and half in Asia. Another third will be distributed to Army Field Force bases in this country, and the remainder goes to National Guard bases. A three-man Ryan field service crew is making a three-week familiarization trip to bases where L-17As are operated and will set up a liaison group for the L-17B project.

New Vice President At Curtiss-Wright

William C. Jordan, formerly general manager of the Curtiss-Wright engine division, has been elected vice president and appointed general manager of the Wright Aeronautical Corp., Wood-Ridge, N. J., engine-building division of the company. The successor, William D. Kennedy is general manager. Kennedy leaves shortly for a European trip.

T. B. Fode, formerly factory manager of the engine division, has been appointed general manager of that organization, to succeed Jordan. The engine division operates a plant in Columbus, Ohio.

Prior to joining Curtiss-Wright, Jordan was vice president and general manager of the Scott Products Engineering Co., Springfield, Ohio. Fode joined the corporation in 1945. Prior to that, he served with the U. S. Navy as head of aircraft production, planning and scheduling, and as special assistant to the chief of the Bureau of Aeronautics in charge of purchase planning.







► **In other personnel changes:** General Dwight D. Eisenhower, D. T. Skunkel, R. F. Porter, Chicago, a commercial vice president, 14 months in the maintenance field after 41 years' service. Skunkel, Skunkel Skunkel Co., Chicago, Inc., joined WPA in 1945. Skunkel was president in charge of maintenance, 14 months in the maintenance field.

Skunkel Skunkel Co., Inc., has acquired Skunkel Skunkel Skunkel Co., Inc., a commercial vice president, 14 months in the maintenance field after 41 years' service. Skunkel, Skunkel Skunkel Co., Chicago, Inc., joined WPA in 1945. Skunkel was president in charge of maintenance, 14 months in the maintenance field.

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A Primer of Sonic Aerodynamics

Basic phenomena associated with high-speed flight
are analyzed in relation to newest aircraft design.

By Robert McFarren

Sound travels in waves through the medium of pressure pulses transmitted by the molecules of a substance. Rate of transmission is dependent on the rate of change of density with pressure, $\Delta p/\Delta \rho$.

For gases, this relationship is expressed as the ratio of specific heats, γ , times the pressure-density ratio, $\Delta p/\Delta \rho$. Since this pressure-density ratio may be expressed as the gas constant, R , times the temperature, T , the speed of sound in air is
 $a = \sqrt{\gamma RT}$

Because the ratio of specific heat for air is 1.40 and the gas constant for air is 1715,
 $a = 49.1 \sqrt{T}$

in which a is in ft./sec. and T is in degrees R. (Rankine, 1 degree F. = 4/5°R).
To obtain a in mph, the expression becomes:
 $a = 38.4 \sqrt{T}$

Effect of altitude—From the foregoing it is apparent that speed of sound varies only with temperature.

Since temperature in the atmosphere decreases linearly with altitude up to the lower limit of the isothermal layer (35,333 ft.) at the rate, $\Delta T/\Delta h$, of 0.0055617 deg. F. per foot of altitude it is possible to determine the speed of sound at any altitude below this limit as follows:
 $T = T_0 - 0.00556 \Delta h$

in which T is Fahrenheit temperature at which the speed of sound is desired, T_0 , the temperature at sea level, and Δh altitude desired.

Eq. (1) may then be written
 $a = 38.4 \sqrt{T_0 - 0.00556 \Delta h}$

Substituting NACA standard sea level absolute temperature 518 for T_0 , this now becomes:
 $a = 38.4 \sqrt{518 - 0.00556 \Delta h}$

Below the lower limit of the isothermal layer, the NACA standard atmosphere temperature remains constant at 356.4° F. absolute, hence speed of sound remains constant at 662 ft/sec.

The isothermal layer extends to approximately 105,000 ft., above which the temperature begins to increase. However, the data extended to 135,000 ft. are adequate for present aircraft design and performance calculation purposes.

► Mach Number—Since the speed of sound is the rate of propagation of sonic pressure changes in still air, when the air is set in motion the relationship between the airspeed and sound speed becomes of considerable importance.

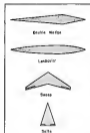
Thus, when the airflow is equal to half the speed of sound, these pressure pulses can travel upstream at only half their still-air speed, in an upstream equal to the speed of sound they cannot travel upstream at all.

This phenomenon was first studied by Prof. Ernst Mach in his experiments with artillery shells at the University of Vienna early in the 19th Century in cooperation with his son, Ludwig, an artillery officer in the Austro-Hungary.

They determined that the ratio of the flow stream velocity to the speed of sound was a useful index to the density changes (compressibility) and its effects on the behavior of the flow.

For this reason, the relation
 $M = v/a$
in which v is the local velocity and a is the local velocity of sound, is now known as the Mach number, M .

► Shock Wave—In an incompressible fluid, which air may be considered to be at comparatively low speeds, slight changes in pressure are communicated instantaneously to all parts of the flow.



Profiles and flowlines for supersonic flow

For example, with an airplane flying at 100 mph, changes in pressure at the air flows over the wing are transmitted forward at the speed of sound in a radial distance ahead of the wing as fast as a sound that the air is "prepared" for the approach of the wing by creating a gentle pressure gradient.

But if the wing is flying at the speed of sound, it becomes impossible for these pressure changes to be propagated forward into the airflow in advance of the approach of the leading edge it becomes supersonic ($M > 1$) and has a pressure less than atmospheric, whereas the pressure at the trailing edge is atmospheric.

This pressure difference constitutes a source of discontinuities, an abrupt change of which, the pressure, density, temperature and velocity as an act of value and on the downstream side are at a different set of values.

As a result, the air must undergo a sudden transition during which its pressure, density, and temperature increase, and its velocity decreases. Since this transition takes place in a distance of 0.0012 in., it is apparent that it must be of a violent nature. It is this phenomenon that has been given the name normal compression "shock wave."

Normal shock waves occur in regions where the flow is normal to the plane of the shock. They always represent a discontinuity from supersonic to subsonic speeds; that is, the flow behind a normal shock is always subsonic in order to satisfy the continuity equation:
 $V_1 A_1 = V_2 A_2$
where V_1 is the velocity upstream of the shock, V_2 velocity downstream.

It is apparent that discontinuous velocity must be achieved by the degree to which upstream velocity is supersonic in order that eq. (4) be satisfied.

When the flow is oblique to the plane of the shock, the result is an "oblique" shock wave of less intensity than a normal shock. Air passing through an oblique shock is slowed and its direction changed towards the plane of the shock. Normal shocks are usually accompanied by a family of oblique shocks in the air it turned into the normal shock.

As expansion waves in a shock wave in reverse, that is, the air is directed around an "outside" curve. In this region the air has a considerable distance over which to follow the required direction.

sition of state, hence an expansion wave is not severe. Through an expansion wave, also, pressure, density and temperature decrease, and velocity increases.

The preceding but isn't exclusively with plane shock waves, such as occur over wing and tail surfaces.

In supersonic flight, a conical shock wave is formed by the entire point of the aircraft or airfoil. This "bow wave" is known as the Mach cone and characterizes all supersonic flight. It originates as a point disturbance and extends outward and aft at an angle dependent on its speed and its shape.

As $M = \frac{V}{a}$ (2) in which θ is half of the cone angle. This angle θ is known as the Mach angle and is a fraction of the speed at the shock. The bow shock of the nose is formed by the Mach line. By extending the angle between the Mach line and the axis of the body, its speed may be determined by eq. (3).

At the formation of the initial bow wave as a source or aircraft becomes supersonic, the wave will be detected a slight distance ahead of the bow.

Directly in front of the body the wave will be normal to the flow and a strong normal shock will exist.

Immediately aft of this normal shock will be subsonic speed and a stagnation point on the rear of the body against which the flow is brought to rest.

As the speed is increased, however, the bow wave will attach itself to the bow and a conventional Mach cone formed. The speed at which the detached wave becomes attached is a function of the shape of the body, blunt nose shapes requiring a higher speed than sharp pointed nose shapes.

► **Shock Stall**—At a normal shock is created over the after portion of a wing, the region behind the shock is at a pressure higher than that in front.

Since the pressure ratio is exaggerated downward, it increases the thickness of the boundary layer, forcing its separation, resulting in a stall similar to that occurring at low subsonic speeds. Thus, an adverse α is introduced by the occurrence of a normal shock wave forward at its large loss.

This phenomenon also occurs on other portions of aircraft, as intakes, wing root fillets, shock boundary layers, etc., resulting in the undesirable increase in drag that characterizes compressible flow at some speed.

► **Mixed Flow**—An air flow around aircraft often is accelerated to a velocity greater than that of the free stream. Often as high as 50 percent more in the case of bluff bodies.

For example, some speed may be attained over portions of an airplane flying at only 175 mph at 15,000 ft. Even with streamlined craft an increase by current jet engine planes may experi-

ence some speed over certain portions at speeds greater than 440 mph.

Let us assume, for example, that a jet fighter was first accelerated to a speed at an airplane speed of 910 mph. At the shock wave here, the flow aft of the shock stagnates and drag is increased. This causes the angle at downstream behind the wing increasing on the horizontal tail, resulting in a decrease in the downward on the tail and a consequent diving moment on the airplane, causing it to "back under."

The pilot pulls back on the stick, which down the vertical, causing the shock to disappear. This in turn reduces the drag and permits the airplane to accelerate until another shock forms.

Thus, an adverse consequence of shock is a normal flow characteristic flight at the critical Mach number of the wing, the airspeed at which the shock first occurs. During this period, portions of the plane are at subsonic speed, some at some speed and still others at supersonic speed.

Because of the speed disturbed, these flow conditions are constantly and rapidly changing, resulting in high loads on the airplane surfaces, longitudinal instability and rapid pilot fatigue.

► **Three Flow Categories**—One of the clearest indications of the difference between the various flow conditions is contained in the definitions of lift coefficient.

For any airfoil at low speed, $C_L = C_{L0}$ (4) For any airfoil at subsonic speed, $C_L = C_{L0} \sqrt{1 - M^2}$ (5) For a thin airfoil at low angle of attack at supersonic speed, $C_L = 4\alpha \sqrt{M^2 - 1}$ (6)

where C_{L0} is the low speed (incompressible) lift coefficient and α is the angle of attack.

From eq. (7) it is apparent that the lift coefficient is increased by compressibility effects up to near some velocity.

From eq. (8) it is seen that the lift coefficient depends only on the angle of attack and the speed down to just above that of sound.

► **Design Solutions**

► **Thin Wings**—Because the increment of lift of the air flowing over an airfoil is a function of thickness and its camber, formation of shock waves may be delayed by the use of thin airfoils with little or no camber.

Thin wings, however, present serious structural and structural problems. Their low lift and narrow range of effective lift coefficients prevent stability and control problems near leading edge speeds are high and the strong leading edge camber is extremely narrow range of flight attitudes over which the airplane would be stable.

Structural problems in the design of wings with thickness of less than 1% prevent an accurate measure of the clearance of wing depth required for strength and rigidity.

Some solutions have been offered, notably monocoque structures in which the wing consists of two cast shells welded along leading and trailing edges. Other solutions include solid wings milled out of bar stock or cast from magnesium or aluminum alloy.

Wing thickness at less than 1% percent for highly loaded designs are not yet practical.

► **Low Aspect Ratio Wings**—Use of aspect ratios of less than 4 offers considerable improvement in high speed flight conditions. As a normal shock is formed along the span of a wing, there is a region of low pressure forward of the shock and of high pressure behind the shock. At the tip, this high pressure is then forced to the low pressure side of the shock, inducing in intensity and providing considerable drag effects.

Not only does low aspect ratio offer considerable drag reduction, but tests have shown that its lift is superior to a higher Mach number than that of the same wing at higher aspect ratio.

Structurally, low aspect ratio is highly advantageous since the span length is reduced, resulting in increased strength and rigidity.

► **Swept Wings**—Drag alleviation characteristics of swept wings were first conceived by Busemann in Germany in 1915 and discovered independently by Robert T. Jones of the NACA only in 1945 before German research on the problem, beginning during the war, became available in this country.

The principle of the swept wing stems from the fact that the pressure distribution over an airfoil is advanced only by that component of the velocity normal to the leading and trailing edges. The velocity, V , swept directly across the chord of a wing, swept back at an angle, Λ , to the engine longitudinal axis at an airplane speed of V_1 :

$$V_2 = V_1 \cos \Lambda \quad (9)$$

Thus, from eq. (9), flow over a wing with 10 deg sweepback would be only 0.866 that of the free stream, and only 0.500 that of the free stream with 60 deg sweepback. For example, an airplane with 30 deg sweepback flying at the speed of sound would experience a speed of only $M = 0.866$ over its wings. This effect would, of course, be counteracted by the speed increment caused by the wing profile.

This phenomenon provides substantial drag reduction over that of the straight wing airplane, particularly in the transonic speed regime, where it is pronounced. The leading edge sweep is a drag coefficient. (Cont. on page 24)



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study Committee for Accidents at its first research job.

High response speeds also cause rapid density changes within the fuel cell, requiring special air drying, cooling and, perhaps, heating equipment.

Other Methods. To solve some of these problems in transient aircraft, several approaches have been employed with considerable success.

The use of small sensors mounted on rocket bodies has proved highly successful. The sensors are instrumented, and telecharting equipment transmits data to the ground. Smooth acceleration of the rocket lines indicate to us passing speed, permits recording of data directly through the transonic zone.

This work has created problems peculiar to the rocket motor itself and the accuracy of the data is dependent on a smooth flight.

Optical and radar tracking is used to determine the exact speed of the rocket and, in the case of missiles not equipped with telescopes, to determine the drag of the attached test body.

A similar method, however, in the falling body technique in which a heavily weighted body is dropped from an altitude of 40,000 ft. and its speed accurately measured by optical and radar equipment. This system also provides a smooth transition from subsonic to supersonic speed.

Both this and the rocket method are expensive, however, because the bodies and installed equipment are expendable.

A third procedure makes use of the increased air speed over an airfoil. Here, a test airfoil is attached normal to the surface of a fighter wing at its point of maximum thickness. The fighter is then taken aloft and flown at its normal velocity. Increment in speed over wing parasitism causes air speed over the test model.

This method is less satisfactory than the others because of the complexity of flow situations over the fighter wing. It provides useful qualitative data, however, for judging gross behavior characteristics of various configurations.

Sweden Orders Firefly

(McGraw-Hill World News)
LONDON—Britain's Fawcett Aviation Co. has received a contract from Sweden for a target towing version of the two-place Firefly naval reconnaissance fighter.

Outfitted with standard Type B Mk. II 350-hp. engine, the craft will be used to tow glider and shore targets for gunnery and aerial firing practice. It will also be equipped for changing stores in flight.

Stability Chief Approach Problem

Neither pilot proficiency nor ground aids will permit lower operating minimums until stability is assured.

By H. C. Bostwick
and Robert B. Row

Scheduled air carriers should not look too optimistically toward next winter in hope that increased use of ILS and GCA will mean sufficiently lower

weather minimums to increase schedule reliability and profit.

The presence of stability problems in the low approach path is an immediate place that means for eliminating it must be provided by stability research and development before minimums much lower than those existing today can become operational.

"Inherent loading," a term seldom

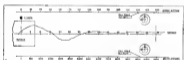
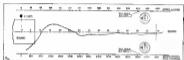
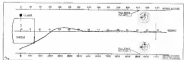
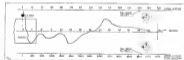


FIGURE 1: Visual proof of low stability on some approach paths. These approaches could be considered satisfactory for landing through a ceiling of 200-300 ft., even for 100 ft. minimums for 75 ft.

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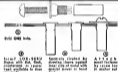
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toasty in frequent rain, is usually a maximum. To obtain increased schedule reliability, efforts should be directed toward lower weather minimums rather than instrument landings.

Aside from the problems associated with air traffic control and the known deficiencies of present radar systems, new techniques and equipment must be provided if these lower minimums are to be realized.

► **Proficiency No Answer**—The philosophy is unanimous: Just by an expert pilot's hand group at Sperry Gyroscopes. In a continuing program of flight research they have had extensive opportunity to analyze weather at low minimums and are developing techniques of weather flying with existing flight aids.

This group is convinced that "upper" low approaches cannot be realized operationally by simply improving visual proficiency in the use of ILS and GCA as they are known today. They believe that minimums below 200 feet can become operational only after technical progress provides the pilot with a stable means of flying the last 20 to 25 seconds of the descent.

This matter of stability cannot be understood by those who consider ILS as a glorified radio range, for it is in the last 15 seconds of a low approach that instability becomes evident. Classification of what is noted by stable and unstable conditions is obtained by analysis of the series of events associated with the guidance process in making ILS approaches.

► **Stability**—On ILS the pilot observes his cross-pointer meter to learn his position relative to the proper track. Action follows mental calculation, and the aircraft's attitude and/or heading is changed to conform. The process is repeated continuously, with landing system signals checking the position of the aircraft.

As long as there is time for this down of action to occur—signal reception, pilot action, aircraft movement—the aircraft is automatically guided onto the desired path without beating. This is stability.

However, whenever the plane is at such the landing zone. Here more and more electronic signal (cross-pointer meter) is necessary for a given distance off the path. Finally, a condition exists in which the aircraft runs too fast due to time lag in the pilot and in slow aircraft response.

As a result, the aircraft may turn to wind but never settle on the desired final track. A provide best time to develop, and once started, these conditions generally increase in severity. The system has become unstable. (Fig. 1 and 2)

► **Expenses**—One should not be misled by the choice low approaches that

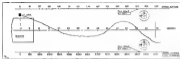


FIGURE 1: This is a fast approach made by expert pilot who had not practiced ILS for about two weeks. Instability became evident soon; thus 60 seconds in low minimum. The subsequent flight results were similar to those of Figure 1.

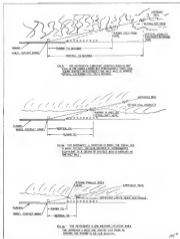


FIGURE 2: "Time Interval to Counter" (TIC). The description of stability conditions is used by Sperry research pilots as it allows for approach lighting aids and is a more accurate index of actual approach conditions encountered.

are made through weather is as apparently understated, stable manner. All such approaches are potentially unstable, because if disturbed, excursions in the critical region of approach must occur. That instability alone forbids such low approaches by the scheduled

as times at the present time. Time intervals, stable manner. All such approaches are potentially unstable, because if disturbed, excursions in the critical region of approach must occur. That instability alone forbids such low approaches by the scheduled



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ground connector equipped with phosphor bronze contacts and springs. Cable is No. 6 flexible copper wire with all-weather rubber cover, reinforced at one end and with rubber sheath, and at the end with stainless steel fitting. Grounding tag is copper.



Grease-Gun Filler

For packing grease guns, combines gun and follower plate made by Inland Steel Containers Co., 6732 St. Norbert Ave., Chicago 38, Ill., is designed to save time and labor in maintenance operations. Gun is inserted through lips opening in cover and its inlet aperture in follower plate. Slight pressure releases plate and squeezed grease into gun barrel. It's cleaned there so no air pockets, and grease is kept clean. As plate is depressed, spring rubber gasket sweeps side of gun clear of grease.

Static Discharger

Designed to be resistant to replace maintenance and used as static dischargers and positive bonding ground cables being marketed by Permut Electric Co., 7236 Glade Ave., Forest Park, Ill. Claimed is that dischargers (tag) reduce interference caused by static and so on. Each consists of 13-in. conducting carbon wick, protected with silver variegation, enclosed in plastic sheath about 14 in. of wick extends from open end. Opposite end is enclosed in stainless steel tube, and fastened, with two mounting holes. Conducting ground cable (sheath), supplied in various lengths, complete with stainless

steel tube to 200 in., starts over two-potential range of -90 to 130 kv. It's elimination of lagging operations, resistance to electrostatic discharges, and reduction of maintenance costs. Material is etched by Hagonizing Physics Div., Federal Electric, Inc., in new vacuum system known as "Vaco-1". Polythene insulation for antenna fittings is molded by Tinsol, Inc., Kenosha, W. Y.



For Aircraft Repair Work

Cherry Jaws set designed for aircraft repair work is now available from Air Associates, Inc., Yonkers, N. Y. Rovers set of constant diameter, in accordance with CAA regulations. Complete equipment comprises 408 tools in two fixed styles, three diameters, and various lengths, head cast, view indicator, six pulling heads, three electric hole punches, material thickness chart, and three high speed twist drills. Recommended: rivet set. Kit costs over \$15 x 15 x 15 in.



Jumbo Ash Tray

Aircraft engineers should be interested in "Junk-it" ash tray, new type, large capacity ash receptacle, designed for public buildings where traffic is heavy. Available in two sizes—portable free-standing type, and wall type (flush-mount) is permanently mounted in place. To operate: touch button and 5-in. dia. dust-out metal blades open, and refuse drops into lower funnel or glass is retrievable for emergency. Water may be placed to best fair for safety.

Insulates Antenna

Polythene insulation for use as various parts of replace antenna system has been developed by E. I. du Pont de Nemours & Co., Wilmington, Del., to reduce static interference and increase safety from static hazards. Represented as tough plastic with several dielectric constants (1 and 2) and a constant rate, to adhere, stain resistant, and wiring. Portions obtained are



Turkish Plans

Turkish State Airlines signs contracts for international airports.

ANKARA (via LONDON)—Turkey is expanding its civil aviation facilities with construction of two large international airports at Istanbul and Ankara. These would be in addition to the present field at Adana.

Standard Mail-Contracts, complying with CAA and ICAO standards, have been signed between the Turkish State Airlines and Washington Electric International Corp. and J. G. White Engineering Corp. to construct and equip these two fields. Approximately \$15,100,000 has been appropriated for the program.

The Ankara airport, to be erected at Etilim, is about 19 mi. northwest of the Capital. Elevation is 3000 ft. Design loading of the runway will be 200,000 lb. Basic air level length of about 6400 ft., connected by airfield with extremely narrow length.

Parton-Townsend building will be patterned along the lines of that at the Washington National Airport, and the hangar will be large enough to house two Constellation or eight DC-3s.

The airport at Yedigöller is intended to be expanded to provide runway lengths and wind coverage for an international airport. Design loading at Yedigöller airport will be the same as at Ankara.

Radio Ankara and Istanbul will be equipped with high intensity runway lighting.

PAE-Walker Flying-Turkish State Airlines wants to have all main airports equipped for all-weather flying. Radio ranges will use VHF. Instrument landing systems adopted are SES 50 type.

Communications—Two international communication systems will be established at Ankara and Istanbul, both of which will have teletype systems, but flag language and domestic operations. Meteorological stations at each airport are also planned.

Control tower equipment for each airport is in accordance with international regulations. VHF communication and services will be used to send all traffic in the region of the airfield.

Operation Step-Up—Having the fields completed in 1946-47 will enable the airline to step up its operations considerably. It will also be able to use new and heavier type planes.

A line covering the requirements for this program will be presented to Parliament for enactment in the near future.

Pakistan Airlines

KARACHI—The Pakistan government has granted licenses to Ghazal Airways and Pak Air Ltd.

The present new air service to eight years, depending on the amount of capital invested and the speed with which services are started. They call for the replacement of Douglas Dauntless by more modern aircraft during the period July 1, 1949-Jan. 1, 1952. In addition the periods set up plans for the operation of international air services which, however, will probably be some time in coming.

Ghazal has been operating on a temporary permit for about year, but Pak Air still has to begin major operations.

Australia May Buy Airline

MELBOURNE—The Australian Department of Civil Aviation wants \$6,100,000 to buy the privately held Qantas Empire Airways stock.

In 1946 the Commonwealth became part owner in the airline along with the Poston Co., Queensland, and the Northern Territory Aerial Services, Ltd. At \$2,500,000 it all that is required to purchase the stock held by these two concerns, the \$3,600,000 balance is estimated for expansion of services and equipment.

Actually, since July, 1946, Qantas has been operating as a fully owned public utility.

Add the Boeing B-50 to the growing list of modern aircraft that are capitalizing on the lighter weight, stronger construction and accurate pre-testing of FEATHER-WEIGHT oil coolers.

These modern FEATHER-WEIGHTS get their minimum weight and maximum resistance to extremes of temperature, vibration and shear from patented aluminum-alloy bracing of their thin all-aluminum sections.

How FEATHER-WEIGHTS will perform under actual flying conditions is clearly forecasted by critical tests in Clifford's wind tunnel laboratory, the largest, most modern in the aeronautical heat exchanger industry.

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ALL-ALUMINUM OIL COOLERS

HYDRAULICALLY-FORMED BELLOWS



SWEDISH SAAB SAFIR TESTS WING

This Swedish SAAB Safir lightplane was used to test the sweptback wing of the SAAB 29 (Arwen Wind, July 15) Thruway

is equipped as a conventional, rigid and smooth 735 (inch). Gales part of the wingtip shows automatic down which allow satisfactory con-

trol of each wing after stalling angle is reached. The Safir normally has straight wings.

New Airline Planned For Indonesia

BATAVIA—An iron in the political dispute between the Dutch and the Indonesians is yielding, the world's newest airline may make its bow into the transport arena. Tentatively named FILO (Frederated Indonesian Aviation Organization), it will be set up as a private enterprise.

Participating in its capitalization will be the Indonesian Federal Government, various commercial interests, and KLM Royal Dutch Airline. Each subscriber will be limited to a minority interest. Lacking together the 3000-mile stretch of Indonesian islands and connecting the archipelago with Australia and Southeast Asia, FILO will have as a nucleus the present inter-island service that KLM operates separately from its intercontinental lines on contract for the Netherlands Indies Government.

According to officials, negotiations are pretty well advanced. Airlines talks between the Dutch and the Indonesian Republic, however, have apparently made better headway than the political negotiations.

Airlines Take Over

MELBOURNE—Temporary withdrawal of the last passenger ship to link the island state of Tasmania with the mainland will work no hardship either side of Bass Strait.

TAA, ANA and Ansett, the three lines that operate services to Tasmania, have ample spare capacity to take care of the last ditcher, who performed via transport to flying. The three lines can handle 5135 passengers a week, but operate at load factors ranging from 65 to 77 percent.

Australia-Orient Airline

MELBOURNE—Australian National Airways is trying to obtain permission to run regular Melbourne service between Australia and East Asia. This is the first operational project to come out of the recent absorption of Cathay Pacific Airlines by ANA.

The Australian interest in Cathay Pacific, a Hong Kong-based carrier, was bought out by ANA and Battenfeld and Swiss, a British trading company, in the Far East. The Hong Kong administration has already signaled its intention to license a service to Australia.

New Australian Airfield

RIO DE JANEIRO—Construction studies for a large airfield near Paulo Afonso falls, scene of a projected hydroelectric development in northeast

Brazil, are nearing completion. It is expected that one of the four airports will be made of wood.

The field will be located at the point where the state boundaries of Alagoas, Sergipe, Alagoas and Pernambuco converge.

NEW SERVICES

AN FRANCE has placed a fleet of Goliath flying boats into operation on the Caribbean area to supplement service of the six engaged Latécoere 631 flying between Reunions and Fort-de-France in the French West Indies.

Southwestern Airlines System has entered into a cargo interchange agreement with Flying Tiger Line, Inc., which provides domestic and international carriage of airfreight shipments to and from ports in the U. S. to 27 foreign countries on a single weekly.

Qantas Empire Airways has reorganized European service between Sydney, Singapore, Port Vila, and Seattle, New Hebrides.

Sabena, Belgian Airlines, is providing sleeper accommodations on DC-60 flights between Brussels and Johannesburg, South Africa. The Brussels-Dublin service has been stepped up to two roundtrips weekly.

Southwestern Airlines System will open two new international routes in November in December—Stockholm-Birmingham-Stockholm—Johannesburg. DC-4s will be used.

Avioline Italiana's Milan-Dublin service is scheduled to begin this month. Three-engine Fairs will be used.

Tamara Empire Airways has been permitted to operate South Atlantic fly-around service between Sydney and Auckland. The planes were withdrawn some months ago due to overhauling difficulties.

KLM, Royal Dutch Airlines, and Capital Airlines have signed an interline passenger agreement which will provide service between any point in Scandinavia and Helsinki, Belgium, Scandinavia and other European countries, as well as Dutch East Indies and West Indies, which are served by KLM. British European Airways has opened a one-stop service between London (Northolt) and Nice.

Pinault Air Lines is extending its services into Europe again. After leaving the Hamburg-Berlin route since last November, a twice weekly service with DC-4s has now been started to Amsterdam, via Copenhagen.

Coast Carle Airfreight Ltd. has extended its services to Zurich, Switzerland.

Belo-Australian Travel and Transport Co. is scheduling flights between Rome and Sydney. Italian-Dutch DC-8s will operate the route every two weeks.

World News Briefs

WELLINGTON—

Plans are about to be completed before the end of the year a London-Sydney air service via Vancouver and Auckland, New Zealand, according to an announcement made by a Canadian, Ltd. spokesman.

RIO DE JANEIRO—

Aerolineas Brasil is talking about buying out the financially ailing Brazilian Navioes Aereos Bradesco. Things have been so bad for NAB that employees of that line recently applied to Congress for help in collecting lost wages.

TRINIDAD—

The established British West Indian Airways Ltd., an associate of British South American Airways Corp., is replacing the Lockheed Lodestar currently in service with five Vickers Vikings.

NEW DELHI—

Royal Indian Air Force strength is being increased. Plans are under way to activate six transport-engine lighter squadrons plus a squadron of jet, a photo-reconnaissance and two electronic units. Training, maintenance and administrative sections also are to be expanded.

MELBOURNE—

In the year ended Mar. 31, Australian domestic airlines carried 1,132,310 passengers (up from 1,060,000 in the previous year) and flew 492,000 passenger miles at average of 64 mi. per hour of population.

MADRID—

Airport rules control and restriction will be modeled on the lines of control systems in use at London airport, according to a report from the British Air Attache in Spain. It was stated that British equipment may be used for the control system to be installed at Villa Cisneros.

ROMBAY—

The British Airways to India has switched from Andania Airways to Indian Co., Ltd., a related company. From on the company's planes, PAV Bombay, at Bombay 512,800, D 18-8, 517,900.

KARACHI—

A bilateral air transport agreement between India and Pakistan permits airlines designated by the Government of India to operate on ten specified routes and allows Pakistan lines to operate vice versa.

... with CMH REX-FLEX STAINLESS STEEL FLEXIBLE AIRCRAFT DUCTING

Bending Rex-Flex units to fit—in on the job—is one of the big time and effort-saving advantages you get with this strong, crush-resistant stainless steel ducting. In tight spots, Rex-Flex can be literally threaded into position... And after connection to adjoining flanges, it stays formed as installed.

Rigid, semi-rigid, and flexible sections can be built into a single unit of

Rex-Flex Ducting to fit precisely in designated locations without waste space or extra couplings. Rex-Flex is air and gas tight, fireproof, odorless, and has high resistance to vibration and bending fatigue.

For lightweight safety, dependability and economical installation: specify Rex-Flex for all aircraft ductwork. Full details on request.

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The volume of REX-FLEX is "An essential feature of Rex-Flex is its ability to conform to many sizes, shapes, and conditions of use... it is the best quality of Chicago Metal Hose Corporation." "FLEXON" adapts CMH products, which have served industry for more than 35 years.

SALES & SERVICE

Better Service for Plane Owners

"Auto service station" type of facilities installed by Gulf of Pittsburgh seem so new business-getter.

By Alexander McNairy

A relatively simple \$18,000 structure, to be erected near Pittsburgh at the Allegheny County Municipal Airport, promises to be the forerunner of a new era in improved service for the private flyer.

Gulf Oil Corp. has developed plans for the new building, which is designed to provide attractive facilities and convenience for the air traveler who flies his own plane. County commissioners have approved the proposal of Gulf's aviation department to erect the super service station for private planes, believed to be the first of its type in this country.

► **Private Structures**—Expected to cost from \$17,000 to \$20,000, the building will be approximately 33 by 33 ft, con-

structed of porcelain on masonry. Its facilities will include a lounge and other rooms, with large map table and other navigational facilities to ease the task of cross-country cross-country flying by private pilots. There will be telephones and modern rest rooms, including a separate lounge room for women pilots and passengers.

The station service attachments are to be constructed to provide complete and courteous service to the individual plane owner, and are to have no other duties to prevent their being full time to this task. They will include courtesy services such as windshield cleaning, tire air, pumping out cabins or cockpit fumes.

► **Service Island**—On the ramp area will be a service island, designed for small airplanes, equipped with modern airport

oblique type fuel gauges providing two grades of aviation fuel, 80 and 91 octane ratings. Filling service will be available on a 24-hour basis.

The island will be arranged so that small aircraft may taxi up to it, much as automobiles drive up to a service station pump for refueling. Airport facilities will be available to provide fuel and oil for larger airplanes parked at any point on the airport.

The projected Allegheny County service building is designed for special features including, by a considerable margin, maximum accommodations set up by the county commissioners for retail users of petroleum products, the Gulf aviation department points out.

The airport service station could well mark the beginning of a parallel to the service facilities provided for touring motorists on every important highway.

► **See New Market**—Pioneer motorists used to have to get up with the type of service in many general flying pilots complain about today. Facilities for ordinary full servicing of automobiles were few. But the oil companies saw potential market as the automobile traffic began to grow and introduced merchandising and service into the fuel and oil business.

There was a considerable let-down during World War II due to the temporary shortages, and automobile service station customers who have never yet climbed back to their former level.

But many a private flyer would take the most advanced jet gets in an automobile service station in preference to the lack of service he still encounters at too many airports.

Lack of actual restrooms lounge and refreshment spots, and convenient servicing equipment at many airports is an embarrassing cause for much of this one-breath customer discontent.

► **Futurist Trend**—If Gulf Oil aviation department's experimental airport service station proves successful, future construction of similar facilities at airports across the country directed to the small planes and their flyers, such as the strong and the discomfort of private flying may be on the way.

Even if the weather problem is not solved for private flyers soon to come it will not be so tedious for the pilot to wait out a storm on the paved as planned accommodations at this type of service station will afford.

Fixed base operations and private flyers will surely take to use how long the alert merchandising and sales departments of companies like Gulf carry this ball, be still before competitive aviation service stations of comparable facilities become available. But how ever slowly this comes about, the Gulf airport promises to bring new private flyer facilities into Allegheny County Airport.



AIRPLANE SHOW FOR NEW YORK

Lightplane distribution are giving the forthcoming New York Airplane Show the nod. Held for Feb. 1927, 1939, the exhibit is going to be held in conjunction with the National Sportsman's Show at Grand Central Palace. Members of the Advisory Committee are (left to right) George E. Galt, president, Van Dusen Aircraft Supplies; Chris van Alst, president, County Aircraft Corp.; Sidney Moskowitz, Atlantic Aviation Corp.; and Alan E. Clark, U. S. Aviation Lister. The exhibit, which will occupy the entire third floor of the Palace, will feature

30 planes and 50 hours of aircraft equipment and supplies. Last time at the last was the Eastern Light Airplane Exhibition in the 1941 National Sportsman's Show when attendance passed the 325,000 mark. According to Chairman Bennett, the exhibit gives dealers and manufacturers a chance to "get a showing of their own at a modern site and with the advantage of sales public exposure." Exhibitor cost \$450 per plane (1975) for new show by the state bond. Booths \$150 for a space measuring 10 x 10 ft.



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Snap-on's NEW FERRET SET!

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All units redesigned to give greater utility, plus a wider range of socket sizes from 1/4" to 5". A new anchor that works in half the space previously required . . . sockets that grip tight onto the handle, yet are easily interchanged.

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These slender wrenches squeeze into tight places to turn those hard-to-reach nuts and bolts and make quick, easy work of the tough jobs on modern engines, carburetors, generators and other intricate units. Ask your "Snap-on man" to show you this complete Ferret Set or write for complete detailed information.



International Division: Kenosha, Wisconsin, U.S.A.

BRIEFING FOR DEALERS & DISTRIBUTORS

NAVION PRICE JUMP—Close on the heels of the last Boech-Buick price increase comes a corresponding jump for the Ryan Navion. The Navion's principal competitor in the four-place retractable four-seat plane class. Price of the 1981 Ryan Navion effective Aug. 3 was boosted to \$9995 from \$9495 by a former price of \$8990.

Earl D. Poudrier, Ryan Aeronautical Co. vice president, said rising cost of new and finished materials and increased labor rates in new contracts signed following a six-month strike brought about the higher price. As a result of the strike Ryan delivered only 19 Navions in July. The Navion, when first placed on the market by North American Aviation, was priced at \$6400.

The new Navion price preserves the differential of about \$1000 between it and the Bonanza (now tagged at \$40,915). The difference, previously more, is narrowing gradually as prices of both planes are increased. Poudrier points out that because some of the Navions will find the price increase a minor factor in their cost and cost figures on the airplane if they use it regularly.

IAKE MILLER TO RYAN—Along with the Navion price jump comes announcement that J. W. (Jack) Miller, former Ryan domestic sales manager, has been appointed Ryan factory representative for Navion sales. In his new job, Miller will work with Navion dealers and distributors on improving retail sales programs, and have charge of selecting additional distributors in territories not yet assigned.

The manufacturer is seeking to establish a "complete, fully integrated custom order network of sales and service centers." In his two years at Ryan, Miller participated in the early "gasoliner" business place dealerships which sold the series on converting commercial lightplanes to Navion use, and later directed Ryan's sales and distribution service program. He said a key item in Ryan's position sales program would be left the company steadily.

EARLY BIRD FLIGHT—On Aug. 19 George Szilag of Cleveland, president of the Earth Buds, will fly his Cessna over the same route Glen Curtiss flew in 1910 from Eagle Beach to Cedar Point. He will be accompanied by Al Eagle, of Cleveland, an early Curtiss salesman. Szilag was an employee of Curtiss at Hempstead, N. Y., at the time of the 1910 flight.

The plane will take off from Cleveland's highest airport and swing over Eagle Beach to begin the flight. At Cedar Point a house plane will be flown to commemorate the Curtiss flight, followed the first in that service of Oakley Cook, Cleveland, motor pilot and fixed base operator at Cleveland, will bring a plane load of other Earth Bud flyers to the Cedar Point ceremony in the Curtiss Curtiss amphibian.

THROTTLING FLIGHT TRAINING IN VIRGINIA—A new report on how the Veterans Administration reported after a startling GI flight training in Virginia is supplied by its Aviation Wings course. Since the new law went into effect July 1 two veterans who been able to "pilot" has come to the regional office that flight training will be of benefit to him in his business or vocation.

In one case turned down by VA, a graduate mechanical engineer was refused permission to learn to fly in spite of a letter of a flight school, and was referred to the adjutant and guidance section of the regional office for a final decision. The regional office is ruling that in a school of higher training a veteran will not be permitted to take flight training unless this is required for his degree, or unless he provides justification.

Asked about the hypothetical case of a veteran who had his company notify that it would fly an airplane for his business travel if he would take a flight course under the GI bill, the regional office said that such a case would be turned down unless he could show that the same company had previously made profitable use of a plane and flying instructor.

—ALEXANDER MASURELY

Door Control

Although its rubber was torn completely off and the vertical fin and prop were damaged in a collision with a power line, a Cessna 140 flew some 90 miles over the Canada coastline to an airfield near Seattle, Wash.

Glen C. Griesmer, of Seattle, the pilot, had descended to an altitude of about 75 ft. to avoid head winds and was "blinded by the sun" when he hit the high tension line, near Yakima. With the rubber gone, the ship went into a series of flat, gliding turns, the torque pulling it toward the left. Griesmer opened the left-hand door to look back to see what was wrong and the fuselage snapped. Telling that to his son, Griesmer guided the plane by opening and closing the doors on alternate sides, aided by his passenger.

Griesmer flew low over the Yakima airport, dropping a note saying his rubber was gone and he was enroute to Seattle. The CAA assumed he would land at Boeing Field, Seattle, and notified authorities there, who called an ambulance. Chief Griesmer arrived and received medical aid and other emergency measures.

But Griesmer landed at a small private strip east of the city. When asked why he hadn't landed at Yakima, he replied "If I was going to crash, I wanted to be close to home."

Portland Airport Safe

Engineers report no serious damage to runway at the Portland airport by the Cessna over land. But that the runway might have been damaged were disputed after a thorough examination. While there is no sign of the runway without much current and no road over the surface but no serious damage to the runway.

Damage to the terminal building also was not found but been reported. All four airlines using the airport, United Air Lines, Northwest Airlines, Western Airlines and West Coast Air Lines, said to be back to the field Sept. 3. Chicago National Guard already has returned its planes and equipment.

Training Conference

A national conference of this approval agencies under the GI Bill of Rights is scheduled Sept. 20-22 at the Continental Hotel, Kansas City. Attending will be representatives of the various state departments of education charged with notifying schools to the Veterans Administration for enrollment of veterans for training.

It is expected that the critical situation in enrollment of flight training for veterans by regional offices will be a major subject of consideration.

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there's more **HPR*** in
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Maintenance records for all types of planes prove that Packard high-altitude aircraft ignition cable gives more HPR—more *Hours Per Replacement. For this cable is different in design, in materials, in construction . . . engineered for greater mechanical and dielectric strength. Its improved resistance to heat, cold, oil, corona, moisture and abrasion safeguard performance under all conditions. Specify Packard high-altitude aircraft ignition cable for more *Hours Per Replacement.

Packard
TRADE MARK

Packard Electric Division, General Motors Corporation, Warren, Ohio

Flight Indicator Survey

When the air is turbulent, when the G-load is suddenly caused as when the air speed is suddenly decreased by an over-taking gust from behind—that's when most stalls occur.

So and detailed reports sent in by pilots regarding to a Survey by Safe Flight Indicator Corp., White Plains, N. Y., manufacturers of the Safe Flight Indicator, still warning device.

Conducted in 1953, the reported survey of the SFI, the survey showed that 96 percent of those who answered the questionnaire felt the stall exists sometimes on their aircraft but added considerably in their confidence and flying pleasure.

Warning of an unexpected stall was reported by 62 percent. Over 75 percent felt that the SFI had improved their own instructor staff prospective ability.

More than 70 pilots submitted reports of their surveys. They included accounts such as the one from a 380-hour pilot who tried to climb his airplane at several altitudes after takeoff knowing but got still warning to drop his nose. Later he discovered the No. 5 fuel compartment had an inches of water in it.

Accident Analysis Class

Formation of a course in aircraft accident investigations for flight instructor officials has been announced by the Flight Safety Foundation, the non-profit safety research group headed by Jerome F. Leidesner.

The course, covering sixteen days, will include investigation and analysis of accidents and detailed studies of the safety lessons learned from the conclusions reached about the accidents. Interest has been shown in the course by various manufacturers and airlines including Capital, American and KLM. The British Embassy has also indicated interest in the course.

Lecturing staff will include CAB Safety Bureau personnel, George Vynne of the National Fire Protection Association, Edward E. Slattery, Jr., CAB, Dr. L. A. Skoyan, formerly of the Office of Flying Safety, representative of the National Association of State Aeronautics Depts., aircraft engine and propeller manufacturers and airlines.

The course will require about 20 hours of classroom and 15 hours of field work.

Sales and Service Chief

Lloyd H. Brader, formerly head of service operations for the Swift 125 aircraft two-place personal plane at Texas Engineering Manufacturing Co., Dallas, has been named to head both sales and

service for the plant. He succeeds Leonard Eason, who resigned as assistant sales manager.

After two years with Curtis Aeroplane Motor Co. of Buffalo, he spent 14 years with Consolidated Aircraft Corp. Later he was plant manager for the Goeborn Corp. aircraft bodies division, Dallas. He was production manager and factory superintendent of Globe Aircraft Corp., original manufacturer of the Swift, and transferred to TEMCO when that company purchased the airplane from the bankrupt Globe organization.

Brader said there would be no drastic changes in the national sales organization for the Swift 125.

Airport Law Conference

State statute efforts have been made to attend a regional airport law conference to be held in St. Louis Aug. 29-31.

Tied with a Paper Gold going the way, an airport law has stopped the plane in less than 100 ft. when it was landing at 70 mph, the manufacturer reports. Is the present model so static? The "Thunder" had been used when had to be studied after every operation. The steel ribbons can be used for several emergency landings before a replacement is necessary.

The arresting gear is being redesigned for constant and uniform potential use and the new model can be made available at a considerable reduction in the original model's cost.



EQUATOR PLANE SHIPMENT

Goeborn Aircraft Company recently started its shipment of its personal plane to South America with a Model 140 two-place transport to Brazil International Airways from White in Corvallis, Ecuador. Model 140 was delivered to the Goeborn division Ecuador 24 in on the Wichita plant for only a few dollars.

Kearney, Empress, Alamosa, Ocala, Iowa, Kansas, Nebraska and Iowa, all seven have CAA and other aeronautics organizations are expected to attend the St. Louis conference.

Lightplane Arresting Gear Improved and Cost Cut

Improved model of All America Aircraft's emergency arresting gear for steep landings, the lightplane uses a standard steel ribbon which is pulled through small friction brake shoes.

Like the previous arresting gear, the new model draws a spike into the ground by an explosive action that airplane is coming in for a landing. The steel ribbon, attached to the spike, slows the airplane down to a complete stop as a fraction of the distance required for normal landing.

Tied with a Paper Gold going the way, an airport law has stopped the plane in less than 100 ft. when it was landing at 70 mph, the manufacturer reports. Is the present model so static? The "Thunder" had been used when had to be studied after every operation. The steel ribbons can be used for several emergency landings before a replacement is necessary.

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AIR TRANSPORT

New Probe Set for Nonskeds

Board decides to take another look at its exemption order and at activities of large irregular carriers.

By Charles Adams

Apparently convinced that its policies are correct control the more than 100 "irregular" carriers using large-type transport planes, the Civil Aeronautics Board has launched a general investigation which may bring a decision to put strong brakes on the free-roaming non-scheduled air transport industry.

The Board announced that hearings will be held "in the near future" on the new probe into activities and practices of the large irregular lines. At the same time, CAB's staff was directed to ascertain the non-scheduled exemption (Section 202.1 of the Economic Regulations) in the light of experience gained since the action was issued in May, 1947.

Industry Focuses—Meanwhile, CAB and it would not rise in the air of regulations for large irregular or carrier operations in any application filed after Aug. 6. This action from at 109 the number of companies authorized to use Lockheed Lodestar or larger equipment is non-scheduled in transportation.

The present group of large irregular carriers holding letters of exemption agrees sufficient to satisfy the demand

for non-scheduled service. CAB declared it added that further opposition of this type should be authorized only after full consideration of the facts in each case.

Action Weighed—Purpose of the investigation into the activities of large irregular air carriers is to determine whether civil or common law remedies should be brought on behalf of CAB for violations of the Civil Aeronautics Act and the Board's regulations. CAB said the probe would include an examination into the practices whereby a number of large irregular airlines appear to be acting in concert, frequently with the assistance of local and travel agencies, to furnish regular service. "The practice, together with apparent tariff violations and excessive frequency and regularity of operations, is the primary cause for our action," CAB declared.

Referring to its directive to the staff to re-examine Section 202.1 of the Economic Regulations, the Board said it would try to determine whether operations contemplated by that action for large irregular air carriers are useful to the public and economically desirable. "An important consideration concerning this regulation can be expected in

the near future," CAB concluded.

Charles Connors—In early stages, CAB's latest crackdown was less drastic than had been feared by the regular operators.

There had been considerable speculation that the Board might order wholesale suspension of non-scheduled lines pending completion of the current investigation into their activities and the re-examination of Section 202.1.

The Air Coach Association, representing three major intercontinental irregular operators—Standard Air Lines, Viking Airlines and Archer Transport-Carrier—said it was "delighted that the Board had decided to explore the issues behind present restrictive regulations governing the American airline lines employing law and order." We hope that in the course of this investigation the Board will give us the opportunity to show that our transportation, like rail transportation, needs coach as well as first-class accommodations.

In its private bout with CAB, Standard Air Lines was doing very well last week. On Aug. 5, the Board suspended Standard's letter of exemption pending a final decision on whether the carrier had violated the Civil Aeronautics Act. But the next day SAIL obtained a court order restraining CAB from enforcing its ruling for 10 days.

Violations Laid—CAB found that Standard had operated between Los Angeles and New York with greater frequency than permitted by the non-scheduled exemption, that it advertised a regular service to the public, and that it violated tariff regulations. "Standard has in no way indicated that any adjustments in its operations and traffic selecting practices have been or will be made to conform with the non-scheduled exemption," the Board declared. "On the contrary, Standard appears to have increased the frequency of its intercontinental operations since initiation of the proceeding against it."

Continuation of Standard's activities, CAB explained, seriously causes proper discharge of our duties under the Civil Aeronautics Act, contributes to unsafe economic conditions in air transportation and constitutes unfair competition with operations of certificated air carrier and those irregular lines operating within the scope of the non-scheduled exemption. The certificated airlines had urged CAB to suspend Standard's letter of exemption immediately, arguing that if permitted to operate pending a final Board decision the company would be able to take advantage of the profitability of the high-traffic summer season, to the disadvantage of other carriers.

Shedded was its restraining order on the ground that CAB's move for immediate suspension would cause "immediate and irreparable damage" since the company would have to abandon its

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licence has been granted to the Argentine Government for the manufacture of Rotor Propellers. This agreement provides further evidence of the acceptance of Rotor products throughout the aircraft industry of the World.



RUSSIA'S NEWEST TWIN-ENGINE TRANSPORT

New one of the Tupolev 16, Russia's post-war replacement of the DC3 type. While details abound are missing, it has been stated that the 27-passenger plane costs the 4100-000. Moscow Khokhlovich ran

"within 25 hours" it is this plane, a number of which have been produced, that will be the backbone of Russia's civil air fleet on some 140 routes that lack the capacity of the 16 USSR equivalents.

AVIATION WEEK, August 16, 1948

organization and disposal of its planes. The carrier's attorneys said they will now ask the District of Columbia Court of Appeals for a stay against CAB's interim order.

► **Transcon Order**—Coincident with its interim operating Standard, CAB issued Transcon's interim Order. Oakland, Calif., to cease and desist from requiring to the public that it operate regular service between designated points. TAL last January had been told to show cause why its letter of application should not be suspended or revoked for "knowing and willful violation of the Civil Aeronautics Act" (Aviation Week, Jan. 13).

CAB at that time claimed Transcon had advertised to handle and frequent cargo service from New York to London and Brussels and the company also had engaged in common carrier foreign transportation of persons—particularly between California and Hawaii and between Guam and Okinawa—after Sept. 13, 1947, when such operations became illegal. The board's latest order prohibits TAL from engaging in any foreign air transportation at persons within the meaning of the Civil Aeronautics Act.

Transcon consented to the order limiting the scheduling of its trans-Pacific cargo operations. But the carrier denied it has relinquished its rights from the public for travel outside the U.S., controlling all its foreign passenger flights since Sept. 10, 1947. Now based on a charter basis, CAB will add further hearings on whether TAL's foreign passenger flights have been in such legitimate private contract operations or included illegal common carrier services.

Hawaii Route Survey

Northwest Airlines plans to make the first seven flight over its newly established route from the Pacific Northwest to Hawaii this fall, but no date has been set for resumption of regular service, according to Civil Aeronautics Board president and general manager.

When reauthorized operations begin, they will be conducted with DC-4s similar to those now used on Northwest's route to Alaska and the East Coast. Boeing Superhercules are slated to replace the DC-4s next year. NWA hopes to receive its first Superhercules in January and to have its entire fleet of four by late next summer.

EAL Adds to Cargo Fleet

Eastern Air Lines plans to triple the capacity of its cargo planes that lie idle during the summer months of June, July and August. EAL will add to its cargo C-54s, EAL will add to its cargo C-54s and C-47s.

NWA Seeks New Mail Pay Rate

Carrier protests its inclusion in "Big Five" by CAB in recent awards, claiming it is still a "need" line.

Unless it can squeeze out of the first company into which it was pushed by the Civil Aeronautics Board last spring, Northwest Airlines faces a lean financial future for its domestic operations. The carrier has informed CAB that a grievance was made last April when the board imposed Northwest with the "Big Five"—American Airlines, Eastern Air Lines, TWA and United Air Lines—for mail pay, compared NWA, a "need" line, with the "Big Five" finding that it is comparable in size and traffic potential to the four industry giants.

► **Rates Compared**—Prior to the April order, the "Big Five" had a 45 cent rate per mile and unit, and Northwest received 60 cents a ton mile. But now NWA is getting around 70.9 cents a ton mile, and slightly above Eastern's estimated 65.18 cents, American's 62.52

cents, TWA's 61.45 cents and United's 59.7 cents.

Becoming a transcontinental carrier in 1945 did not, Northwest emphasized, make it comparable to the "Big Five." The company admitted that it is some of the studies made by CAB in making its domestic rates differ among domestic airlines. But it said that in most instances the four-category carrier is better than the "Big Five" in North America.

For mail rate purposes, NWA believes it should be considered with operators more nearly its own size, such as Delta, Capital and Braniff, rather than those "major firms" it is like the "Big Five." Northwest believes that its company is still in a "need" class, not a service rate class.

► **Competitive Size**—To illustrate CAB's "error" in placing it in the same class as the "Big Five," Northwest cited these figures on relative size: domestic revenue ton miles flown, 1947—American 157,145,000, United 159,591,000, Eastern 100,627,000, TWA 97,165,000, Braniff 71,064,000, Capital 51,960,000, Delta 21,925,000 and Braniff 21,213,000. Domestic route miles in operation January, 1948—Shaw 7907, American 6587, Eastern 5715, TWA 5024, Northwest 5588, Capital 3591, Braniff 3123 and Delta 2365.

Operating revenue per cubic foot Dec. 31, 1947—American \$78,326,000, United \$68,272,000, Eastern \$55,356,000, TWA \$44,200,000, Northwest \$15,731,000, Capital \$15,255,000, Braniff \$11,607,000 and Delta \$13,117,000. Revenue passenger miles flown in twelve months ended January, 1948 (in thousands)—American 3,367,627, United 3,187,081, Eastern 969,475, TWA 835,108, Northwest 544,771, Braniff 286,490, Delta 208,310 and Braniff 399,437.

► **Forecast Clash**—Under the "Big Five" mail rate, CAB forecast that Northwest would earn \$2,371,000 net profit on domestic operations in a future year. But NWA indicates that a net operating loss of close to \$1,600,000 is more likely for 1948 under the big five and other forecasts, adding that \$1.94 a ton mile mail rate would be needed to break even. Instead of the 70.9 cents offered Northwest, it said need \$2.87 a ton mile and pay in excess a 10 percent profit on domestic services.

"CAB's forecast of operations is based on some facts in the certificate," NWA said, and disagreed with the NWA at present and on the immediate future.



The Chicago Tribune has taken delivery of the converted B-747 (upper left) for use as an executive transport. Completely re-equipped by Allstate Aviation Service Co., Los Angeles, the plane was flown to Chicago by Capt. Howard West, American Airlines pilot (upper right), shown in the observation room of the craft with Peggy Carr, Allstate's secretary. Before conversion to its executive status, the B-747 was used as a cargo plane.

COLOMBIA, McORMICK, LIKES TO FLY IN STYLE

The Chicago Tribune has taken delivery of the converted B-747 (upper left) for use as an executive transport. Completely re-equipped by Allstate Aviation Service Co., Los Angeles, the plane was flown to Chicago by Capt. Howard West, American Airlines pilot (upper right), shown in the observation room of the craft with Peggy Carr, Allstate's secretary. Before conversion to its executive status, the B-747 was used as a cargo plane.

the carrier declined. "This is extremely disastrous because of the critical financial position which NWA occupies to day. It is vital to NWA that its financial position be substantially improved to enable it to preserve its capital structure, and to meet its obligations and public responsibilities."

Northwest also objected to CAB's finding that the carrier's 60 cents-a-ton rate and rate, as effect paid to Jan. 1, 1948, should not be moved retroactively. The company said it needed \$2,075,770 in additional mail pay to break even for the period from Nov. 1, 1946, through Dec. 31, 1947.

► **Cash Payback**—Need of attractive mail pay increases, given the weak rate set for the period beginning Jan. 1, 1948, and met Northwest in a poor end position to meet future obligations for flight and ground equipment and link its company officials indicated.

NWA used Boeing Airplane Co. \$18,750,000 for plants and parts through June 1949, of which only \$4.

121,000 was paid by June 17, 1948. It also owed Glenn L. Martin Co. \$10, \$11,000 for plants and parts of which \$7,550,000 was paid by June 17, 1948. An unpaid balance of \$1,596,000 on ground facilities and equipment made total obligations of \$15,346,000 for which Northwest needs cash through next June.

Feeder in the Black

Prudent Airlines, which made its first flight as a certificated feederline on Feb. 15, already has pushed into the black.

Net operating profit of \$12,171 was shown for June, according to president T. H. Davis. Operating costs were cut from \$1.86 per passenger mile during the first month of service to 87 cents per mile. Traffic reached a new peak in June as the feeder handled 9646 revenue passengers, 17,214 lb. of mail, 17,663 lb. of express and 13,958 lb. of freight.



was a new of equipment utilizing new (upper left). Allstate's modification of June 1948 (lower right) enable refueling, cargo, maintenance, security, this, much less and during same.

New Orient Service

The Canadian government has reversed its policy of giving the Government-owned Trans-Canada Air Lines a monopoly on international operations from Canada.

Canadian Pacific Air Lines has been granted authority to fly from Vancouver to Sydney, Australia, via Honolulu, Canton Island and the Fiji Islands, and from Vancouver to Hong Kong via Kuala Lumpur, Singapore Island, Tokyo and Shanghai. A branch service from Fiji would connect New Zealand with the through Sydney-Vancouver operation. The Hong Kong run may eventually be extended to India.

Under Canadian government policy had done in 1944, only TCA was to be given international routes from the Dominion. Now, it is expected, TCA is fully occupied with its trans-Pacific and Bermuda services.

Canadian Pacific said its new venture is a natural development of the com-



DESIGNER TAYLOR explains to Herbert Taylor and Robert Eshleman of CAA.

Compressed Air Operates Exits

Modification of present emergency exit system on aircraft so that they are automatically operational regardless of passenger presence of need is proposed by Vincent Taylor.

Taylor, a Colonial Airlines maintenance engineer, proposes that the system be operated from a central release in the flight compartment, utilizing compressed air in a carbon dioxide which would instantly blast the exit doors out in the event of an emergency landing.

The system would incorporate the compressed air supply being fed to the emergency landing with a selector valve and emergency bottle release arranged

positions within the pilot's reach.

Before take-off, the selector valve, operated either by the captain or co-pilot, would be turned to the 'on' position, drawing the air supply to the selector. After the ship is airborne, the pilot would then turn the selector valve to the 'off' position to prevent the hatchet from opening in the event an supply was inadvertently released to the emergency system.

Before landing, the procedure would be repeated with selector valve on, enabling the emergency hatchet to open in the event of crash landing.

CAA is experimenting the system

pany's long connection with Douglas-United fleet, pointed by GP arrangements over 60 years ago. The Canadian Pacific airline fleet indicated very heavy losses during the war, and the company believed the high cost of maintaining replacement units is imperative to take the line to build that trade.

No date has been set for the new trans-Pacific service from Vancouver, although it may be started next summer. Canadian DC-61 "North Star" transports will be purchased for the operation.

WAL-Arizona Deal

Western Air Lines and Arizona Air were once asked CAA approval of an agreement whereby WAL would transfer to the new airline its route segment from San Diego, Calif., to Yuma, Ariz., on the city of El Centro. CAA

The two carriers agreed that the deal would allow Western of an important operation while strengthening Arizona Airways system. WAL, which has been making three trips a week over the San Diego-Yuma link, had sought an extension from Yuma to Phoenix, Ariz., in order to justify more frequent service. But this application was denied by CAA, and in its place Arizona Airways was given a route from Phoenix to Yuma.

By distancing metropolitan operations of both companies terminating at Yuma and continuing the two links into one through route from San Diego to Phoenix via Yuma and El Centro, all routes on the two will be able to receive twice-daily round-trip service, the carrier indicated. CAA, WAL, would down facilities and services to Arizona Airways of San Diego under the agreement.

Port Authority-Tetrahoro Deal Still Brewing

Negotiations between the Port of New York Authority and Tetrahoro Aircraft's owner-leased Fleet Western probably will be concluded by the end of this month, with the Port Authority purchasing the New Jersey airline's license for an outright sum reportedly near \$10,000,000.

Western told *Airways* Weekly that the negotiations were "going very well" and that there was every reason to believe they would be fruitfully concluded "within the month."

Should negotiations lag down however, Western said he would not consider selling the license to its partner, but would develop it himself so that "anything from a C-46 to an airplane that wanted to land there would be able to do so."

Pay Raise for Hostesses Hits New High in TWA

Wage scales for hostesses and ground crew have hit a new peak, according to a recent report issued jointly by TWA and the Air Line Stewards and Stewardesses Association.

New scales for hostesses flying domestic routes range from a \$10.88 starting wage to \$15.55 during the seventh year of service. This compares with the old scale of \$10 to \$20 for the sixth year of service and for periods of time thereafter.

TWA's hostesses on international flights have a new scale of \$100 to \$130 over a seven-year period, while flight attendants will earn \$250 as a starting wage and be advanced to \$378 a month in six years. Average pay costs for the approximately 600 employees covered by the new pact is 7 percent.

Accident Report

The pilot's failure to follow a dogleg in the runway probably caused the crash of a chartered Northwest Airlines DC-4 at Mt. Sanford, Alaska, last Nov. 12.

A CAAI accident investigation report declared that the plane, flying at 11,000 ft., was 21 miles northwest of the runway's center line when it hit Mt. Sanford, which towers to 16,300 ft. The runway from Anchorage, Alaska, to Edmonton, Canada, is directed to the north to provide a safe lateral clearance of the peak.

The report said clouds or the aircraft's terrain- or beam-projection prevented the crew from seeing the mountain. All 30 persons aboard the plane, bound from Shanghai to New York, were killed in the mishap.

Fuel Taxes

Airlines hold line, with only two changes in state levies since Jan. 1.

The airlines are more than holding the line in a never-ending struggle against imposition of new fuel taxes by recent hungry individual state legislatures.

On Aug. 1, the nationwide tax picture was much the same as on Jan. 1, with 29 states and the District of Columbia granting the carriers full relief from fuel levies either through exemptions or through refunds. But the number of states providing partial or full increased from eleven to twelve in the seven-month period, with a corresponding drop from nine to eight in the number of states offering no fuel tax relief to the airlines.

Two States Act-In the two changes that in 1949, the Rhode Island legislature decided to refund in full its 4 cents a gallon aviation fuel tax. Louisiana, which last year provided full tax exemption, has raised in the opposite direction and now offers only partial relief.

Since there is no assurance that existing exemptions and refunds will not be increased at this time, state legislation is a serious, continuous of the states who in many respects a victory for the airlines. The Air Transport Association believes the recent trend definitely is pointed in the direction of further relief.

Importance of state fuel levies to the airlines was discussed in detail this month by William T. Raymond, ATA's director of government affairs, at the annual meeting of the Pacific Region North American Gasoline Tax Conference in Seattle. He said that if all 48 states imposed aviation fuel taxes, resulting levies would threaten the foundation of the air transport industry.

Threat Descended-In 1947, the certified domestic aviation tax amounted \$271,412,000 of gasoline. A 4-cent per gallon state tax on this quantity of fuel would have cost the airlines about \$11,000,000, or more than ten times their present fuel tax bill and would have made their 1947 deficit more than \$18,000,000 instead of \$21,000,000.

Raymond declared the airline industry's opposite view of local taxation of aviation fuel because it is not a benefit tax, nor is it related to ability to pay or to other valid taxes. Unlike the benefit theory, persons who benefit most from the use of a facility pay the largest part of the cost, and revenues derived from the taxing source are used



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Step Toward Socialization?

Creation of an interagency arm of the Air Coordinating Committee to study a proposed program for selecting commercial transport prototype development is an encouraging move.

Senator Brewster and Representative Blawie, spokesmen of the new group, discuss considerations for selecting criteria that Congress, when it is ready to consider legislation, will have specific recommendations on the subject from the government departments involved. Aviation has nothing to lose and everything to gain from a compilation of facts and requirements. But caution is necessary before any such plan is approved.

While Mr. Blawie expressed some criticism of the aircraft industry's cold enthusiasm for such a program, it is not even this late to point out that millions of dollars in costs have been absorbed by the industry since those dark, bleak days when the manufacturers were filing their statements with the President's Air Policy Commission. It is also essential to remember that for every new airplane there is a further dependency on the government. Aviation can not perpetually expect more airplanes without more services. It is a healthy sign that some officials in the industry are asking serious questions about the wisdom of further subsidies. It is no secret that manufacturers have been disturbed about the tendency toward a socialist aircraft industry. As cost and complexity of aircraft have increased, government has sought to dictate more and more to the manufacturer, to the point where a few company executives have wondered how much longer the manufacturer would have any degree of development responsibilities left to him.

With assurance of a shot on a Tri-Group Air Force, some industry circles began a more searching examination of the proposal that the U. S. finance development of commercial transport prototypes.

In military circles there is still strong doubt that any fleet of transports built to move both the service and consumer air forces would be of much use to either. And the airlines are on record in the past with similar doubts, despite their current tendency to gush in this newest gift in the taxpayer's expense.

So far there is little evidence that the previous development procedure for the largest and costliest transports can be improved. This has involved contracts for the services for military prototypes so that the government underwrites the original design, construction and development. This assures the success of aircraft meeting their specialized needs. The manufacturers and their customers then have financial commercial ventures.

In the light of experience elsewhere, it is difficult to understand any very strong sentiment for a military aircraft pool which would be available to the airlines, as far as

further control by government at what kind and how many commercial transports there shall be.

We need look no farther than Great Britain to see the sad result of government prioritizing the commercial transport industry will build. There, the Ministry of Supply has the contracts, and often without consulting even the most vital needs of civil aviation.

The results have been an epidemic of pride and prejudice, trial and error, contradictions and confusion, all adding up to stark failure. There is the Tudor case (in which BOAC has landed down these transports for north-Atlantic operation, after the Ministry of Supply assigned them specifically for that use) and the rejection of the Wytheville by British European Airways after the Ministry of Supply had prioritized the Wytheville as ideal for BEA's service.

So that to this date, Britain has not produced one acceptable long-range transport competitive with those of the United States.

It is to be hoped that our own aircraft industry will not overlook the advantages of owning its own capital as developing commercial aircraft. Douglas deserves congratulations for going ahead with plans for the DC-6A Airliner with its own funds. That is the way the Douglas Company built its world-wide reputation. Companies that have government subsidy. It is to be hoped that Corpus Christi will study the Douglas example and content to risk a little of its own millions dollars in cash, rather than avoid federal underwriting of the cost of the CW-31, which many air transport people say shows excellent possibilities.

It is true that most manufacturers do not have the means to develop revolutionary types such as the jets, and that the airlines do not have the funds to buy them if they were developed today.

But the government could and should realize the importance to the national welfare of developing high speed military transports and start work at once on a program to develop them. History and real sense is the Boeing Stearman, especially, show that carrier transports can be adapted to civil needs and procedures can be met within the framework of existing authority. No legislation is needed. New legislation of the kind suggested would either be included to one or two companies in exchange for further development endorsement of a two or three billion dollar industry.

It is true that airlines get out of its habit of thinking the government owes it a living. If the opposition to the transport development bill is indicative of a changing attitude, it is a reason for rejoicing. This country can lose its worldwide aircraft manufacturing leadership goodbye the day it permits the industry to become a wall-to-wall business. ROBERT H. WOOD



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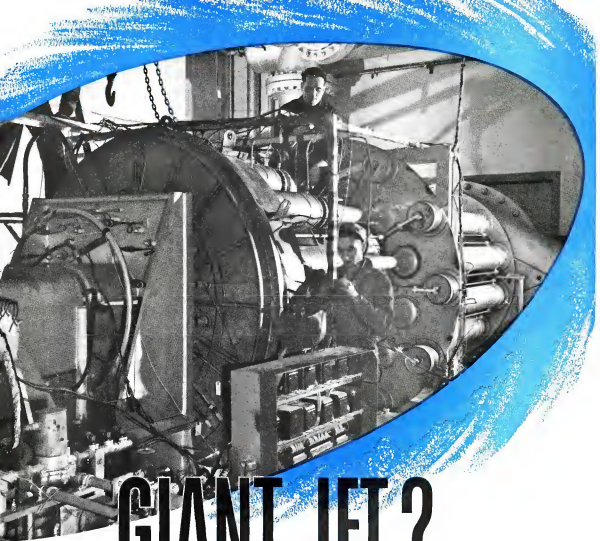
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This huge structure is not an oversize jet engine, although the resemblance is striking. Actually it's the modern test stand for jet engine turbine elements at General Electric's new jet aircraft gas turbine laboratory in Lynn, Mass., where turbines as large as 30,000 horsepower will be tested under simulated operating conditions.

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